

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2019 Defense Threat Reduction Agency **Date:** February 2018

<b>Appropriation/Budget Activity</b>					<b>R-1 Program Element (Number/Name)</b>							
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 1: Basic Research					PE 0601000BR / *DTRA Basic Research							
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	254.315	34.623	37.201	37.023	-	37.023	37.229	38.265	39.290	40.117	Continuing	Continuing
RU: Basic Research for Countering WMD	254.315	34.623	37.201	37.023	-	37.023	37.229	38.265	39.290	40.117	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Defense Threat Reduction Agency (DTRA) Basic Research funds support research across physical, material, engineering, computational, and life sciences directed toward increased knowledge and understanding of the fundamental aspects of observable phenomena associated with the threats posed by weapons of mass destruction (WMD).

DTRA's Basic Research effort is the Nation's only basic research portfolio solely dedicated to countering weapons of mass destruction (CWMD). It provides for the discovery and development of basic knowledge by research performers from academia and world-class research institutions in government and industry. This investment helps motivate the scientific community to conduct research benefiting WMD-related defense missions, advancing the body of CWMD knowledge, and improving knowledge of research efforts that support nonproliferation, counter proliferation, and consequence management. These efforts are closely coordinated with DTRA's Chemical and Biological Technologies Department, which executes a basic research portfolio under DoD's Chemical and Biological Defense Program.

Each year, program and technical managers conduct formal assessments of the portfolio, leveraging deep Science and Technology (S&T) expertise within DTRA, as well as from the Defense Basic Research Advisory Group, independent external panel reviews, and other CWMD-focused stakeholders. This coordination facilitates unique, CWMD-relevant basic research while eliminating unintended duplication of effort in the broader defense S&T community.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
Previous President's Budget	35.436	37.201	37.340	-	37.340
Current President's Budget	34.623	37.201	37.023	-	37.023
Total Adjustments	-0.813	0.000	-0.317	-	-0.317
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.813	-			
• Economic Assumptions	-	-	-0.317	-	-0.317

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Defense Threat Reduction Agency		Date: February 2018
Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide / BA 1: Basic Research	R-1 Program Element (Number/Name) PE 0601000BR / *DTRA Basic Research	
<p><b><u>Change Summary Explanation</u></b></p> <p>The decrease in FY 2019 is due to the impact of lower economic assumptions for inflation. The funding level in this program element continues to reflect the impact of incremental Service Requirement Review Board reductions, as part of the Department of Defense reform agenda, for consolidation and reduction of service contracts.</p>		

# UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2019 Defense Threat Reduction Agency										Date: February 2018		
Appropriation/Budget Activity 0400 / 1					R-1 Program Element (Number/Name) PE 0601000BR / *DTRA Basic Research				Project (Number/Name) RU / Basic Research for Countering WMD			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
RU: Basic Research for Countering WMD	254.315	34.623	37.201	37.023	-	37.023	37.229	38.265	39.290	40.117	Continuing	Continuing

## Note

Prior year funds are related to this project in program element 0602718BR.

## A. Mission Description and Budget Item Justification

The Basic Research for Countering WMD project, as the nation's only basic research portfolio solely dedicated to countering weapons of mass destruction (CWMD), is a core strategic investor in future scientific and technological progress across the full spectrum of the Defense Threat Reduction Agency's (DTRA's) CWMD mission areas. This project concentrates on high risk, high-payoff basic research, leveraging world-class expertise in academia, government, and industry, to increase the foundational body of scientific knowledge supporting DTRA's Applied Research and Advanced Technology Development projects.

This project aligns with DTRA's strategic objectives that support policy and planning guidance from the Office of the President, the Department of Defense (DoD), and the broader WMD threat reduction community. The portfolio addresses this guidance through capability enhancements, projects, and Science and Technology (S&T) investments that support CWMD and reduce global nuclear dangers. Specifically, they include: accelerating the development of standoff radiological/nuclear detection capabilities; researching countermeasures and defenses to non-traditional agents; enhancing nuclear forensics; securing vulnerable materials; developing new verification technologies; developing an in-depth understanding of the capabilities, values, intent, and decision making of potential adversaries, whether they are states, networks, or individuals; defeating WMD agents; researching biologically-based and inspired materials for DoD applications; and leveraging science, technology, and innovation through domestic and international partnerships and agreements.

This project solicits, coordinates, and conducts research to build a robust, forward-looking fundamental research portfolio targeting strategic, mission-focused, basic research with high potential impact for CWMD. The research projects are selected for scientific merit, technical quality, and the potential for innovation. Each individual research project offers opportunities to expand the knowledge base to help the warfighter, to bring to bear new science solutions with a fresh approach, or to leverage revolutionary approaches to technical surprise, building a foundation for future CWMD solutions. This research will enable new capabilities to: better understand the environment, threats and vulnerabilities; control, defeat, disable, and/or dispose of WMD threats; and safeguard the force by managing consequences. Each program manager's portfolio leverages a wide range of scientific disciplines, including physics, chemistry, biology, mathematics, information and network sciences and focuses basic research on the CWMD mission.

## B. Accomplishments/Planned Programs (\$ in Millions)

	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>
<b>Title:</b> Project RU: Basic Research for Countering WMD	34.623	37.201	37.023
<b>Description:</b> Project RU funds the exploration and discovery of fundamental scientific knowledge related to DTRA's CWMD mission by research performers from academia, government, and industry.			
<b>FY 2018 Plans:</b>			

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Defense Threat Reduction Agency		<b>Date:</b> February 2018	
<b>Appropriation/Budget Activity</b> 0400 / 1	<b>R-1 Program Element (Number/Name)</b> PE 0601000BR / *DTRA Basic Research	<b>Project (Number/Name)</b> RU / Basic Research for Countering WMD	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2017</b>	<b>FY 2018</b>
<p>- Shape and oversee the CWMD Basic Research portfolio, comprised of approximately 150 active basic research awards on a three to five year cycle. This portfolio continues to address the DoD priority on CWMD science and technology, and supports specific priorities on Autonomy, Data-driven Decisions, Electronic Protection, System Resiliency and other emerging areas of interest.</p> <p>- Support world-class talent in WMD research at universities and laboratories to bolster the development of the future Science, Technology, Engineering, and Mathematics workforce.</p> <p>- Assess entire CWMD Basic Research portfolio on an annual basis.</p> <p>- Assure progress toward technical objectives and support collaborative relationships within the scientific community through an annual technical review of each grant to assess scientific advancement.</p> <p>- Assess the focus and scope of the program related to CWMD challenges and assess the coordination of CWMD basic research across the DoD mission space and the broader basic research community to avoid duplication and ensure successful partnerships via an External Panel Review.</p> <p><b>FY 2019 Plans:</b></p> <p>- Manage and steer the CWMD Basic Research portfolio, comprised of approximately 150 active basic research awards on three-to five-year cycles. This portfolio continues to address DoD CWMD science and technology requirements, supporting specific priorities focused on current and emerging areas of interest.</p> <p>- Support collaborative relationships within the scientific community and ensure progress toward technical objectives through an annual technical review of each grant to assess scientific advancement.</p> <p>- Support the development of world-class talent in WMD research at universities and laboratories to foster the future Science, Technology, Engineering, and Mathematics workforce.</p> <p>- Conduct an Internal Portfolio Review to assess the focus and scope of the portfolio related to CWMD challenges and assess the coordination of CWMD basic research across the DoD mission space and the broader basic research community to avoid duplication and ensure successful partnerships.</p> <p><b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> No significant change.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>		34.623	37.201
<b>C. Other Program Funding Summary (\$ in Millions)</b>			
N/A			
<b>Remarks</b>			
*Prior year funds are related to this project in program element 0602718BR.			

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Defense Threat Reduction Agency		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 0400 / 1	<b>R-1 Program Element (Number/Name)</b> PE 0601000BR / <i>*DTRA Basic Research</i>	<b>Project (Number/Name)</b> RU / <i>Basic Research for Countering WMD</i>
<p><b><u>D. Acquisition Strategy</u></b></p> <p>Procurement methods include competitive selection awards through DTRA's Broad Agency Announcement and collaborative funding through other organizations.</p> <p><b><u>E. Performance Metrics</u></b></p> <p>Project performance is measured via a combination of statistics including the number of publications generated, number of students trained in sciences and engineering supporting DoD educational goals, number of participating research organizations, and percentage of awards transitioned to other programs for further development.</p>		